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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
SINGH, DALZID E	
ART UNIT	**PAPER NUMBER**
2633	

DATE MAILED: 05/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/928,316	FREY ET AL.	
	Examiner	Art Unit	
	Dalzid Singh	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, "antenna gimbals" as claimed in claims 1 and 17; and "location operator controls, and power supplies" as claimed in claim 15, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Allowable Subject Matter

2. The indicated allowability of claims 5, 12 and 13-20 of the previous office action is withdrawn in view of the newly discovered reference(s) to Ames et al (US Patent No. 5,371,814) and Chung et al (US Patent No. 6,895,185). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3 and 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koonen (US Patent No. 6,674,966) in view of Ames et al (US Patent No. 5,371,814).

Regarding claim 1, Koonen discloses wireless network for linking data systems (14) and (74a), as shown in Fig. 7, comprising:

sensitive radio frequency (RF) equipment (in Fig. 7, Koonen shows sensitive radio frequency equipment, such as BTS, MUX/DEMUX and OPT TRX; it is well known that electronic components are sensitive to radio frequency or RF signals; for example, electronic components, such as capacitors, inductors, or transformers, found in optical transmitter (OPT TRX) of Koonen are sensitive to radio frequency);

an antenna assembly located apart from the RF equipment (in Fig. 7, Koonen shows antenna assembly (74a) located apart from the RF equipment); and

a single fiber, bi-directional fiber optic link coupling the antenna to the RF equipment, wherein both RF signals and data signals can be sent across the data link (in Fig. 7, Koonen shows a single bi-directional fiber optic link (16) coupling the antenna (74a) to the RF equipment (14); the fiber is bi-directional since it transmit signal in two directions, shown by the arrows going into and out of WDM equipment (132); see also col. 9, lines 10-13, Koonen teaches transmission of signal in the upstream direction and downstream direction; signals coming from the antenna is considered as RF signal and signal coming toward the antenna is considered as data signals; wherein both RF and data signal are transmitted on the bi-directional fiber optic link (16)).

Koonen discloses the wireless network for linking data systems, as shown in Fig. 7, and differ from the claimed invention in that Koonen does not specifically disclose a shelter housing for the radio sensitive equipment. In wireless communication system, such as discussed above, the antenna is usually located outside on an open environment. Equipments or devices which transmit, receive and process signal coming to and going out of the antenna are usually located in the close proximity to the antenna. Environmental condition, such as excessive heat or damped condition, or electromagnetic radiation from the antenna, will add noise to data signal. Therefore, it would have been obvious to an artisan of ordinary skill in the art to provide a housing to shelter the radio frequency equipment which are sensitive to environmental conditions.

One of ordinary skill would have been motivated to do this in order to reduce or eliminate noise caused by such environmental conditions.

Furthermore, as shown in Fig. 7, Koonen shows wavelength division multiplexing system and differ from the claimed invention in that Koonen et al do not disclose fiber optic rotary joints adapted to pass the fiber optic link through antenna gimbals. However, it is well known to couple fiber optic to the antenna using an interface such as fiber optic rotary joints. Ames et al is cited to show such well known concept. In col. 2, lines 12-16, Ames et al teach the use of fiber optic rotary joints in the communication system. Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide optical interface such as fiber optic rotary joints as taught by Ames to the system of Koonen. One of ordinary skill in the art would have been motivated to do such in order to provide low loss and low crosstalk between channels.

Regarding claim 2 (as far as understood), as shown in Fig. 7, Koonen shows that the radio frequency equipment is located away from the antenna (74a), (equipments, such as BTS, MUX/DEMUX and OPT TRX are located away or off from the antenna). It is assumed that applicant means "away from" since it unclear what "off the antenna" means.

Regarding claim 3, in Fig. 7, Koonen shows WDM or wavelength division multiplexer for the transfer of the RF signals and data signals (signals coming from the antenna is considered as RF signal and signal coming toward the antenna is considered as data signals).

Regarding claim 6, as shown in Fig. 7, Koonen shows WDM (132, wavelength division multiplexer) located in the equipment (14) and coupling signals passing across the fiber optic link (16) to and from other RF sensitive equipment in the antenna (74a), (in col. 9, lines 19-23, Koonen teaches the use of directional coupler implemented in multiplexer and demultiplexer for coupling signals across the fiber optic link to and from RF sensitive equipment in the antenna, such as OPT TX (76a or 78a)).

Regarding claim 7, in Fig. 7, Koonen shows that the RF sensitive equipment in 14 includes special transmitters and receivers for different wavelengths of signals passing across the data link (as shown in Fig. 7, Koonen shows optical transceivers such as OPT TRX (116) or OPT TRX (118), comprises of transmitter and receiver for transmitting and receiving different wavelength across the data link (16), see col. 10, lines 9-20).

Regarding claim 8, Koonen discloses wireless network for linking data systems as discussed above, and differ from the claimed invention in that Koonen does not specifically disclose that a shelter has an environment that is mild and dry. However, it is well known that operation of optical component such as laser diodes found in optical transmitter (OPT TRX) of Koonen is susceptible to variation in temperature. It is also well known that electronic components and the connection points are prone to rust and short circuit in a damped environment. Therefore, it would have been obvious to an artisan of ordinary skill in the art to place RF components of Koonen in a housing that is mild and dry and provide protection from environmental conditions. One of ordinary skill

in the art would have been motivated to do this in order to prolonged operation lifespan of the equipment and maintained peak performance.

Regarding claim 9 (as far as understood), as shown in Fig. 7, Koonen shows that the antenna assembly (74a) comprises a radio frequency equipment assembly housing radio frequency equipment for the antenna (as shown in Fig. 7, the antenna assembly comprises radio frequency equipment, such as OPT TX (76a or 78a), which would obviously housed in a housing in order to protect the element from environmental conditions). It is assumed that applicant means "away from" since it unclear what "on from the antenna" means.

Regarding claim 10, in Fig. 7, Koonen shows that the antenna assembly (74a) includes wavelength division multiplexing (WDM) system.

5. Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koonen (US Patent No. 6,674,966) in view of Cheong et al (US Patent No. 6,477,154).

Regarding claim 4, Koonen discloses wireless network for linking data systems comprising fiber optic cable, as discussed above, and differ from the claimed invention in that Koonen does not specifically disclose the system is adapted to send command link RF, return link RF, command and status signals over the fiber optical cable. However, in communication system it is well known to send command and status information signals. Cheong et al is cited to show such well known concept. In col. 7, lines 33-36, Cheong et al teach transmission or sending of control channel including a command signal. In col. 8, lines 10-12 and col. 10, lines 11-13, Cheong et al teach

transmission of reverse link or return link and status information. As shown in Fig. 2 (215) and Fig. 6 (414), Cheong et al show that the link, which connects mBS and mBSC is a fiber optic link, since it carries optical signal such as Σ_1. The forward and reverse signal, which comprise of command and status signal is transmitted between mBS and mBSC over the fiber optic link. Therefore, it would have been obvious to an artisan of ordinary skill in the art to send command link RF, return link RF, command and status signals over the fiber optical cable as taught by Cheong et al to the system of Koonen. One of ordinary skill in the art would have been motivated to do this in order to provide centralized management of resources. Moreover, since the signal is transmitted to the antenna and from the antenna (as shown in Figs. 2 and 6), therefore the signal is RF or radio frequency signals (see col. 8, lines 28-32).

Regarding claim 11, Koonen discloses wireless network for linking data systems comprising fiber optic cable, as discussed above, and differ from the claimed invention in that Koonen does not specifically disclose the system is adapted to send command link RF, return link RF, command and status signals over the fiber optical cable between the antenna assembly and the shelter. However, in communication system it is well known to send command and status information signals. Cheong et al is cited to show such well known concept. In col. 7, lines 33-36, Cheong et al teach transmission or sending of control channel including a command signal. In col. 8, lines 10-12 and col. 10, lines 11-13, Cheong et al teach transmission of reverse link or return link and status information. As shown in Fig. 2 (215) and Fig. 6 (414), Cheong et al show that the link, which connects mBS (i.e., antenna assembly) and mBSC (i.e., processor equipments

for the antenna assembly which is obviously sheltered in order to protect from environmental conditions) is a fiber optic link, since it carries optical signal such as Σ_1. The forward and reverse signal, which comprise of command and status signal is transmitted between mBS and mBSC over the fiber optic link. Therefore, it would have been obvious to an artisan of ordinary skill in the art to send command link RF, return link RF, command and status signals over the fiber optical cable as taught by Cheong et al to the system of Koonen. One of ordinary skill in the art would have been motivated to do this in order to monitor operating condition of various devices. Moreover, since the signal is transmitted to the antenna and from the antenna (as shown in Figs. 2 and 6 of Cheong et al), therefore the signal is RF or radio frequency signals (see col. 8, lines 28-32 of Cheong et al).

6. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koonen (US Patent No. 6,674,966) in view of Owens et al (US Patent Pubs. No. 2004/0264446).

Regarding claim 12, Koonen discloses wireless network for linking data systems (14) and (74a), as shown in Fig. 7, comprising:

sensitive radio frequency (RF) equipment (in Fig. 7, Koonen shows sensitive radio frequency equipment, such as BTS, MUX/DEMUX and OPT TRX; it is well known that electronic components are sensitive to radio frequency or RF signals; for example, electronic components, such as capacitors, inductors, or transformers, found in optical transmitter (OPT TRX) of Koonen are sensitive to radio frequency);

an antenna assembly located apart from the RF equipment (in Fig. 7, Koonen shows antenna assembly (74a) located apart from the RF equipment); and

a single fiber, bi-directional fiber optic link coupling the antenna to the RF equipment, wherein both RF signals and data signals can be sent across the data link (in Fig. 7, Koonen shows a single bi-directional fiber optic link (16) coupling the antenna (74a) to the RF equipment (14); the fiber is bi-directional since it transmit signal in two directions, shown by the arrows going into and out of WDM equipment (132); see also col. 9, lines 10-13, Koonen teaches transmission of signal in the upstream direction and downstream direction; signals coming from the antenna is considered as RF signal and signal coming toward the antenna is considered as data signals; wherein both RF and data signal are transmitted on the bi-directional fiber optic link (16)).

Koonen discloses the wireless network for linking data systems, as shown in Fig. 7, and differ from the claimed invention in that Koonen does not specifically disclose a shelter housing for the radio sensitive equipment. In wireless communication system, such as discussed above, the antenna is usually located outside on an open environment. Equipments or devices which transmit, receive and process signal coming to and going out of the antenna are usually located in the close proximity to the antenna. Environmental condition, such as excessive heat or damped condition, or electromagnetic radiation from the antenna, will add noise to data signal. Therefore, it would have been obvious to an artisan of ordinary skill in the art to provide a housing to shelter the radio frequency equipment which are sensitive to environmental conditions.

One of ordinary skill would have been motivated to do this in order to reduce or eliminate noise caused by such environmental conditions.

Furthermore, Koonen differs from the claimed invention in that Koonen does not disclose the enclosure is for antenna motor control and power supplies and including configurable add drop multiplexer. However, it would have been obvious that the enclosure could be used to enclose antenna motor and power supplies. Moreover, it would have been obvious that the enclosure includes add/drop multiplexer. Owens et al is cited to show such well known concept. As shown in Fig. 1, Owens et al show enclosure (46) to enclose power supplies (see paragraph [0056]). As shown in Fig. 1, Owens et al show that the enclosure (46) is coupled to various customers through links (18) for adding and dropping services. Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide enclosure for the power supplies, antenna motor and add/drop multiplexer as taught by Owens et al to the system of Koonen. One of ordinary skill in the art would have been motivated to do such in order to reduce or eliminate noise caused by such environmental conditions.

Regarding claim 13, Koonen discloses wireless network for linking data systems (14) and (74a), as shown in Fig. 7, comprising:

sensitive radio frequency (RF) equipment (in Fig. 7, Koonen shows sensitive radio frequency equipment, such as BTS, MUX/DEMUX and OPT TRX; it is well known that electronic components are sensitive to radio frequency or RF signals; for example,

electronic components, such as capacitors, inductors, or transformers, found in optical transmitter (OPT TRX) of Koonen are sensitive to radio frequency);

an antenna assembly located apart from the RF equipment (in Fig. 7, Koonen shows antenna assembly (74a) located apart from the RF equipment); and

a single fiber, bi-directional fiber optic link coupling the antenna to the RF equipment (in Fig. 7, Koonen shows a single bi-directional fiber optic link (16) coupling the antenna (74a) to the RF equipment (14); the fiber is bi-directional since it transmit signal in two directions, shown by the arrows going into and out of WDM equipment (132); see also col. 9, lines 10-13, Koonen teaches transmission of signal in the upstream direction and downstream direction; signals coming from the antenna is considered as RF signal and signal coming toward the antenna is considered as data signals; wherein both RF and data signal are transmitted on the bi-directional fiber optic link (16)).

Koonen discloses the wireless network for linking data systems, as shown in Fig. 7, and differ from the claimed invention in that Koonen does not specifically disclose a shelter housing for the radio sensitive equipment. In wireless communication system, such as discussed above, the antenna is usually located outside on an open environment. Equipments or devices which transmit, receive and process signal coming to and going out of the antenna are usually located in the close proximity to the antenna. Environmental condition, such as excessive heat or damped condition, or electromagnetic radiation from the antenna, will add noise to data signal. Therefore, it would have been obvious to an artisan of ordinary skill in the art to provide a housing to

shelter the radio frequency equipment which are sensitive to environmental conditions. One of ordinary skill would have been motivated to do this in order to reduce or eliminate noise caused by such environmental conditions.

Furthermore, Koonen differs from the claimed invention in that Koonen does not disclose the enclosure is for antenna motor control and power supplies and including configurable add drop multiplexer. However, it would have been obvious that the enclosure could be used to enclose antenna motor and power supplies. Moreover, it would have been obvious that the enclosure includes add/drop multiplexer. Owens et al is cited to show such well known concept. As shown in Fig. 1, Owens et al show enclosure (46) to enclose power supplies (see paragraph [0056]). As shown in Fig. 1, Owens et al show that the enclosure (46) is coupled to various customers through links (18) for adding and dropping services. Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide enclosure for the power supplies, antenna motor and add/drop multiplexer as taught by Owens et al to the system of Koonen. One of ordinary skill in the art would have been motivated to do such in order to reduce or eliminate noise caused by such environmental conditions. Furthermore, it would have been obvious to provide such enclosure anywhere along the link before the antenna.

Regarding claim 15, as discussed above, the combination of Koonen and Owens et al disclose shelter further includes location operator controls, intermediate frequency equipment and power supplies and is located a distance from the antenna radio frequency assembly (see Fig. 7 and paragraph [0060] of Owens et al).

Regarding claim 16, as discussed above, the combination of Koonen and Owens et al disclose that the shelter and the antenna is serrated by fiber (see Fig. 7 of Koonen) and differ from the claimed invention in that the combination does not specifically disclose that the antenna and the shelter are separated by approximately 10 kilometers of single mode fiber. However, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide such distance between the shelter and the antenna. One of rodinary skill in the art would have been motivated to provide such in order to provide coverage to a particular location located at such distance as 10 kilometers.

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koonen (US Patent No. 6,674,966) in view of Owens et al (US Patent Pubs. No. 2004/0264446) and further in view of Ames et al (US Patent No. 5,371,814).

Regarding claim 14, the combination of Koonen and Owens et al disclose wavelength division multiplexing system (see Fig. 7 of Koonen) and differs from the claimed invention in that the combination does not disclose fiber optic rotary joints adapted to pass the fiber optic link through antenna gimbals. However, it is well known to couple fiber optic to the antenna using an interface such as fiber optic rotary joints. Ames et al is cited to show such well known concept. In col. 2, lines 12-16, Ames et al teach the use of fiber optic rotary joints in the communication system. Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide optical interface such as fiber optic rotary joints as taught

by Ames to the system of the combination of Koonen and Owens et al. One of ordinary skill in the art would have been motivated to do such in order to provide low loss and low crosstalk between channels.

8. Claims 17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koonen (US Patent No. 6,674,966) in view of Ames et al (US Patent No. 5,371,814) and further in view of Cheong et al (US Patent No. 6,477,154).

Regarding claim 17, Koonen discloses wireless network for linking data systems (14) and (74a), as shown in Fig. 7, comprising:

sensitive radio frequency (RF) equipment (in Fig. 7, Koonen shows sensitive radio frequency equipment, such as BTS, MUX/DEMUX and OPT TRX; it is well known that electronic components are sensitive to radio frequency or RF signals; for example, electronic components, such as capacitors, inductors, or transformers, found in optical transmitter (OPT TRX) of Koonen are sensitive to radio frequency);

an antenna assembly located apart from the RF equipment (in Fig. 7, Koonen shows antenna assembly (74a) located apart from the RF equipment); and

a single fiber, bi-directional fiber optic link coupling the antenna to the RF equipment, wherein both RF signals and data signals can be sent across the data link (in Fig. 7, Koonen shows a single bi-directional fiber optic link (16) coupling the antenna (74a) to the RF equipment (14); the fiber is bi-directional since it transmit signal in two directions, shown by the arrows going into and out of WDM equipment (132); see also col. 9, lines 10-13, Koonen teaches transmission of signal in the upstream direction and

downstream direction; signals coming from the antenna is considered as RF signal and signal coming toward the antenna is considered as data signals; wherein both RF and data signal are transmitted on the bi-directional fiber optic link (16)).

Koonen discloses the wireless network for linking data systems, as shown in Fig. 7, and differ from the claimed invention in that Koonen does not specifically disclose a shelter housing for the radio sensitive equipment. In wireless communication system, such as discussed above, the antenna is usually located outside on an open environment. Equipments or devices which transmit, receive and process signal coming to and going out of the antenna are usually located in the close proximity to the antenna. Environmental condition, such as excessive heat or damped condition, or electromagnetic radiation from the antenna, will add noise to data signal. Therefore, it would have been obvious to an artisan of ordinary skill in the art to provide a housing to shelter the radio frequency equipment which are sensitive to environmental conditions. One of ordinary skill would have been motivated to do this in order to reduce or eliminate noise caused by such environmental conditions.

Furthermore, as shown in Fig. 7, Koonen shows wavelength division multiplexing system and differ from the claimed invention in that Koonen et al do not disclose fiber optic rotary joints adapted to pass the fiber optic link through antenna gimbals. However, it is well known to couple fiber optic to the antenna using an interface such as fiber optic rotary joints. Ames et al is cited to show such well known concept. In col. 2, lines 12-16, Ames et al teach the use of fiber optic rotary joints in the communication system. Therefore, it would have been obvious to an artisan of ordinary skill in the art at

the time the invention was made to provide optical interface such as fiber optic rotary joints as taught by Ames to the system of Koonen. One of ordinary skill in the art would have been motivated to do such in order to provide low loss and low crosstalk between channels.

Furthermore, the combination of Koonen and Ames et al discloses wireless network for linking data systems comprising fiber optic cable, as discussed above, and differ from the claimed invention in that the combination does not specifically disclose the system is adapted to send command link RF, return link RF, command and status signals over the fiber optical cable. However, in communication system it is well known to send command and status information signals. Cheong et al is cited to show such well known concept. In col. 7, lines 33-36, Cheong et al teach transmission or sending of control channel including a command signal. In col. 8, lines 10-12 and col. 10, lines 11-13, Cheong et al teach transmission of reverse link or return link and status information. As shown in Fig. 2 (215) and Fig. 6 (414), Cheong et al show that the link, which connects mBS and mBSC is a fiber optic link, since it carries optical signal such as Σ_1. The forward and reverse signal, which comprise of command and status signal is transmitted between mBS and mBSC over the fiber optic link. Therefore, it would have been obvious to an artisan of ordinary skill in the art to send command link RF, return link RF, command and status signals over the fiber optical cable as taught by Cheong et al to the system of Koonen. One of ordinary skill in the art would have been motivated to do this in order to provide centralized management of resources. Moreover, since

the signal is transmitted to the antenna and from the antenna (as shown in Figs. 2 and 6), therefore the signal is RF or radio frequency signals (see col. 8, lines 28-32).

Regarding claim 20, as discussed above, the combination is adapted to carry both radio frequency signals and data signals across the data link.

9. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koonen (US Patent No. 6,674,966) in view of Ames et al (US Patent No. 5,371,814) in view of Cheong et al (US Patent No. 6,477,154) and further in view of Ballance (US Patent No. 4,977,593).

Regarding claim 18, the combination of Koonen, Ames et al and Cheong et al disclose transmitting of separate wavelength for upstream and downstream (see col. 9, lines 10-18) and differs from the claimed invention in that the combination does not specifically disclose that wavelengths or first channel is adapted to operate at a wavelength of 1310 nanometers and the second channel is adapted to operate at a wavelength of 1550 nanometers. However, in bidirectional optical communication is well known to provide such wavelengths first and second channel. Ballance is cited to show such well known concept. In col. 10, lines 56-68, Ballance discloses bidirectional system using 1550 and 1310 nanometers. Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide such wavelengths in the system of the combination. One of ordinary skill in the art would have been motivated to do such in order to reduce crosstalk between channels.

Regarding claim 19, Regarding claim 18, the combination of Koonen, Ames et al and Cheong et al disclose transmitting of separate wavelength for upstream and downstream (see col. 9, lines 10-18) and differs from the claimed invention in that the combination does not specifically disclose that wavelengths or first channel is adapted to operate at a wavelength of 1310 nanometers and the second channel is adapted to operate at a wavelength of 1550 nanometers. However, in bidirectional optical communication is well known to provide such wavelengths first and second channel. Ballance is cited to show such well known concept. In col. 10, lines 56-68, Ballance discloses bidirectional system using 1550 and 1310 nanometers. Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide such wavelengths in the system of the combination. Furthermore, it would have been obvious that there exist transmitter operating at 1550 nanometers, a receiver operating at 1310 nanometers and a combiner splitter for 1310/1550 nanometers, and wherein the antenna includes a receiver operating at 1550 nanometers, a transmitter operating at 1310 nanometers and a combiner splitter for 1310/1550 nanometers (see Fig. 2 of Ballance and Fig. 7 of Koonen). One of ordinary skill in the art would have been motivated to do such in order to reduce crosstalk.

Response to Arguments

10. Applicant's arguments with respect to claims 1-4 and 6-11 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Walker et al (US Patent No. 6,198,457) is cited to show satellite antenna with enclosure comprising of control unit, up converter, down converter, power amplifier and fiber optical interface (see col. 7, lines 46-51).

Chung et al (US Patent No. 6,895,185) multi-purpose optical fiber access network.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalzid Singh whose telephone number is 703-306-5619. The examiner can normally be reached on Mon-Fri 8am - 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703-305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DS
May 27, 2005

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